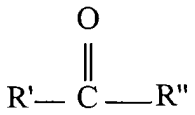
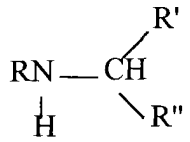
What is claimed is:

1) A process for producing a secondary amine product which comprises heating a mixture comprising: a) hydrogen; b) a carbonyl compound represented by:



and c) a primary amine reactant represented by the structure R--$NH_2$ to any temperature in the range of about 80° C to about 230° C and under any pressure in the range of about 100 psig to about 3000 psig in the presence of an effective catalytic amount of a catalyst comprising metallic palladium, wherein said secondary amine product has the formula:



in which R is any alkyl, aminoalkyl, alkylaryl, or aminoalkylaryl group, whether straight-chain, branched, or cyclic, R' and R" are each independently selected from the group consisting of: hydrogen; $C_1$-$C_{20}$ alkyl, whether straight-chain, branched, or cyclic, subject to the proviso that both R' and R" are not simultaneously hydrogen, wherein the amount of tertiary amine produced during said process is less than 3.00 % by weight of the total amount of secondary amine produced.

2) A process according to claim 1 in which said catalyst has a surface area of at least 100 $m^2$ per gram.

3) A process according to claim 1 in which said primary amine reactant is a diamine.

4) A process according to claim 3 wherein said diamine contains two ---$NH_2$ groups.

5) A process according to claim 1 in which the product secondary amine is produced in a yield of at least 97.00 % by weight based on all amine products produced.

6) A process according to claim 1 in which the amount of tertiary amine impurity produced is less than 2.0 % by weight based on all amine products produced.

7) A process according to claim 1 wherein said catalyst comprises palladium on carbon.

8) A process according to claim 7 wherein said carbon comprises charcoal.

9) A process according to claim 1 wherein said carbonyl compound comprises a ketone selected from the group consisting of: acetone, methylethyl ketone, methylisobutyl ketone, methylisoamyl ketone, 2-butanone, 2-pentanone, 2-hexanone, and 2-ethylhexanone.

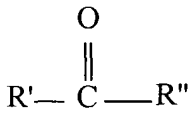
10) A process according to claim 3 in which said primary amine is isophorone diamine, said carbonyl compound is acetone, and in which the product N,N'-Diisopropylisophorone Diamine is produced in a yield of at least 97.00 % by weight based on all amine products produced.

11) A process according to claim 3 in which said primary amine is isophorone diamine, said carbonyl compound is acetone, and in which amount of tertiary amine impurity produced is less than 2.0 % by weight based on all amine products produced.

12) A process for producing a secondary amine product from a primary amine reactant, which process comprises heating a mixture that comprises the components:

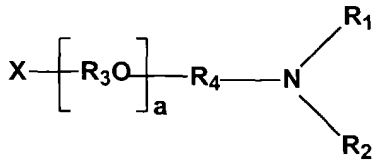
a) hydrogen;

b) a carbonyl compound represented by the structure:

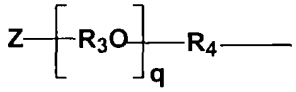


in which R' and R" are each independently selected from the group consisting of: hydrogen; $C_1$-$C_{20}$ alkyl, whether straight-chain, branched, or cyclic, subject to the proviso that both R' and R" are not simultaneously hydrogen, and

c) an amine reactant comprising one or more alkoxylated amines having a primary amine function and described by the formula:



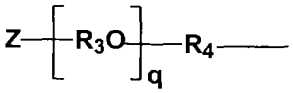
in which $R_1$ and $R_2$ are each independently selected from the group consisting of: hydrogen; an alkyl group having 1, 2, 3, 4, 5, or 6 carbon atoms, whether straight-chain or branched; or a radical of the formula:



in which $R_3$ may be an alkyl group having any number of carbon atoms selected from 1, 2, 3, 4, 5, or 6, straight-chain or branched; $R_4$ is a straight-chain or branched alkyl bridging group having 1, 2, 3, 4, 5, or 6 carbon atoms; Z is a hydroxy group or alkyl group containing 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched; q is any integer between 0 and 400; and wherein X is any of:

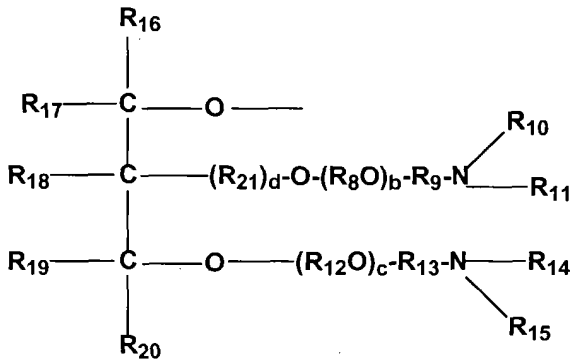
i) a hydroxy group or an alkyl group having any number of carbon atoms selected from 1, 2, 3, 4, 5, or 6; or

ii) a group $R_6$-N-- or $R_6$-N-$R_7$-- in which $R_5$ and $R_6$ are each independently selected from the group consisting of: hydrogen; an alkyl group having 1, 2, 3, 4, 5, or 6 carbon atoms, whether straight-chain or branched; or

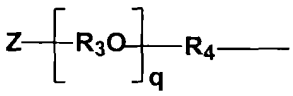


as defined above in which Z is a hydroxy group or an alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms, and in which $R_7$ is a straight-chain or branched alkylene bridging group having 1, 2, 3, 4, 5, or 6 carbon atoms; or

iii) a moiety of the formula:



in which $R_{10}$, $R_{11}$, $R_{14}$, and $R_{15}$ are each independently selected from the group of: hydrogen; an alkyl group having 1, 2, 3, 4, 5, or 6 carbon atoms, straight-chain or branched; the moiety



as defined above in which Z is a hydroxy or alkoxy group having 1, 2, 3, 4, 5, or 6 carbon atoms; $R_8$ and $R_{12}$ are each independently alkyl groups having 1, 2, 3, 4, 5, or 6

carbon atoms, straight-chain or branched; $R_9$, $R_{13}$, and $R_{21}$ are each independently selected from a straight-chain or branched alkyl bridging linkage having 1, 2, 3, 4, 5, or 6 carbon atoms; $R_{16}$, $R_{17}$, $R_{18}$, $R_{19}$, $R_{20}$ are each independently selected from hydrogen or an alkyl group having 1, 2, 3, 4, 5, or 6 carbon atoms; d is 0 or 1; and a is any integer between 0 and 100, with the proviso that when X is a moiety of the formula given in iii) above, the sum of a+b+c is any number between 2 and 400,

to any temperature in the range of about 80° C to about 200° C and under any pressure in the range of about 100 psig to about 3000 psig in the presence of an effective catalytic amount of a catalyst comprising metallic palladium, wherein the total amount of tertiary amine produced during said process is less than 3.00 % by weight of the total amount of secondary amine produced.

13) A process according to claim 12 in which said catalyst has a surface area of at least 100 $m^2$ per gram.

14) A process according to claim 12 in which said amine reactant is a diamine.

15) A process according to claim 14 wherein said diamine contains two ---$NH_2$ groups.

16) A process according to claim 1 in which the product secondary amine is produced in a yield of at least 97.00 % by weight based on all amine products produced.

17) A process according to claim 1 in which the amount of tertiary amine impurity produced is less than 2.0 % by weight based on all amine products produced.

18) A process according to claim 1 wherein said catalyst comprises palladium on carbon.

19) A process according to claim 18 wherein said carbon comprises charcoal.

20) A process according to claim 1 wherein said carbonyl compound comprises a ketone selected from the group consisting of: acetone, methylethyl ketone, methylisobutyl ketone, methylisoamyl ketone, 2-butanone, 2-pentanone, 2-hexanone, and 2-ethylhexanone.